

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

What is claimed is:

- 1.-17. (Cancelled)
18. (Currently Amended) A method of treating a subterranean formation comprising:
~~providing a servicing fluid comprising reduced density, coated particulates, wherein the reduced density, coated particulates comprise a particulate material; a coating material; and a density reducing material comprising polystyrene divinylbenzene adhered to the coating material on an exterior surface of the particulate material; and~~
providing at least one coated particulate comprising a coating material and a particulate material;
providing at least one density reducing material comprising polystyrene divinylbenzene;
adhering the density reducing material to a surface of the coated particulate on-the-fly to create at least one reduced-density, coated particulate;
providing a servicing fluid;
placing the reduced-density, coated particulate in the servicing fluid; and
pumping the servicing fluid into the subterranean formation.
19. (Currently Amended) The method of claim 18 wherein the coating material comprises at least one resin composition.
20. (Withdrawn—Currently Amended) The method of claim 19 wherein the resin composition comprises at least one hardenable resin component comprising at least one hardenable resin and at least one hardening agent component comprising at least one liquid hardening agent, at least one silane coupling agent, and at least one surfactant.
21. (Withdrawn—Currently Amended) The method of claim 19 wherein the resin composition comprises at least one furan-based resin selected from the group consisting of a furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin and mixtures any combination thereof.
22. (Withdrawn—Currently Amended) The method of claim 21 further comprising at least one solvent selected from the group consisting of 2-butoxy ethanol, butyl acetate, furfuryl acetate, and mixtures any combination thereof.

23. (Withdrawn—Currently Amended) The method of claim 19 wherein the resin composition comprises at least one phenolic-based resin selected from the group consisting of a terpolymer of phenol, a phenolic formaldehyde resin, a mixture of phenolic and furan resin, and ~~mixtures~~ any combination thereof.

24. (Withdrawn—Currently Amended) The method of claim 23 wherein the resin composition further comprises at least one solvent selected from the group consisting of butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, and ~~mixtures~~ any combination thereof.

25. (Currently Amended) The method of claim 19 wherein the resin composition comprises at least one HT epoxy-based resin selected from the group consisting of bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, and ~~mixtures~~ any combination thereof.

26. (Currently Amended) The method of claim 25 wherein the resin composition further comprises at least one solvent selected from the group consisting of dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, and ~~mixtures~~ any combination thereof.

27. (Withdrawn—Currently Amended) The method of claim 19 wherein the resin composition comprises at least one phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

28. (Currently Amended) The method of claim [[1]] 18 wherein the coating material comprises at least one tackifying composition.

29. (Currently Amended) The method of claim 28 wherein the tackifying composition ~~material is~~ comprises at least one tackifying composition selected from the group consisting of a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, and [[a]] any combination thereof.

30. (Withdrawn) The method of claim 18 wherein the density-reducing material comprises micro-material.

31. (Original) The method of claim 18 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

32. (Original) The method of claim 18 wherein the particulate material is coated with the coating material on-the-fly.

33. (Cancelled)

34. (Currently Amended) The method of claim [[33]]34 wherein the reduced-density, coated particulates are ~~suspended~~ placed in the servicing fluid on-the-fly.

35. (Currently Amended) A method of fracturing a subterranean formation comprising:

~~providing a fracturing fluid comprising reduced-density, coated particulates, wherein the reduced-density, coated particulates comprise a particulate material; a coating material; and a density reducing material comprising polystyrene divinylbenzene adhered to an exterior surface of the particulate material; and~~

providing at least one coated particulate comprising a coating material and a particulate material;

providing at least one density reducing material;

adhering the density reducing material to a surface of the coated particulate on-the-fly to create at least one reduced-density, coated particulate;

providing a fracturing fluid;

placing the reduced-density, coated particulate in the fracturing fluid; and

placing the fracturing fluid into the subterranean formation at a pressure sufficient to create at least one fracture therein.

36. (Currently Amended) The method of claim 35 wherein the coating material comprises at least one resin composition.

37. (Withdrawn—Currently Amended) The method of claim 36 wherein the resin composition comprises at least one hardenable resin component comprising at least one hardenable resin and at least one hardening agent component comprising at least one liquid hardening agent, at least one silane coupling agent, and at least one surfactant.

38. (Withdrawn—Currently Amended) The method of claim 36 wherein the resin composition comprises at least one furan-based resin selected from the group consisting of a furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin and ~~mixtures~~ any combination thereof.

39. (Withdrawn—Currently Amended) The method of claim 38 wherein the resin composition further comprising comprises at least one solvent selected from the group consisting of 2-butoxy ethanol, butyl acetate, furfuryl acetate, and mixtures any combination thereof.

40. (Withdrawn—Currently Amended) The method of claim 36 wherein the resin composition comprises at least one phenolic-based resin selected from the group consisting of a terpolymer of phenol, a phenolic formaldehyde resin, a mixture of phenolic and furan resin, and mixtures any combination thereof.

41. (Withdrawn—Currently Amended) The method of claim 40 wherein the resin composition further comprises at least one solvent selected from the group consisting of 2-butoxy ethanol, butyl acetate, furfuryl acetate, and mixtures any combination thereof.

42. (Currently Amended) The method of claim 36 wherein the resin composition comprises at least one HT epoxy-based resin selected from the group consisting of bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, and mixtures any combination thereof.

43. (Currently Amended) The method of claim 42 wherein the resin composition further comprises at least one solvent selected from the group consisting of dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, and mixtures any combination thereof.

44. (Withdrawn—Currently Amended) The method of claim 36 wherein the resin composition comprises at least one phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

45. (Currently Amended) The method of claim 35 wherein the coating material comprises at least one tackifying composition.

46. (Currently Amended) The method of claim 45 wherein the tackifying composition ~~material is~~ comprises at least one tackifying composition selected from the group consisting of a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, and [[a]] any combination thereof.

47. (Withdrawn) The method of claim 35 wherein the density-reducing material comprises micro-material.

48. (Original) The method of claim 35 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

49. (Original) The method of claim 35 wherein the particulate material is coated with the coating material on-the-fly.

50. (Withdrawn—Currently Amended) A method of installing a gravel pack comprising:

~~providing a gravel pack composition comprising a delivery fluid and reduced-density, coated particulates wherein the method of making the reduced-density, coated particulates comprises the steps of:~~

~~coating a particulate material with a coating material to create a coated particulate; and,~~

~~adhering a density-reducing material to the surface of the coated particulate on-the-fly to create reduced-density, coated particulates; and,~~

~~providing at least one coated particulate comprising a coating material and a particulate material;~~

~~providing at least one density reducing material;~~

~~adhering the density reducing material to a surface of the coated particulate on-the-fly to create at least one reduced-density, coated particulate;~~

~~providing a delivery fluid;~~

~~placing the reduced-density, coated particulate in the delivery fluid to form a gravel pack composition; and~~

introducing the gravel pack composition to the well bore so that the reduced-density, coated gravel particulates form a gravel pack substantially adjacent to the wellbore.

51. (Withdrawn—Currently Amended) The method of claim 50 wherein the coating material comprises at least one resin composition.

52. (Withdrawn—Currently Amended) The method of claim 51 wherein the resin composition comprises at least one hardenable resin component comprising at least one hardenable resin and at least one hardening agent component comprising at least one liquid hardening agent, at least one silane coupling agent, and at least one surfactant.

53. (Withdrawn—Currently Amended) The method of claim 51 wherein the resin composition comprises at least one furan-based resin selected from the group consisting of a furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin and mixtures any combination thereof.

54. (Withdrawn—Currently Amended) The method of claim 53 further comprising at least one solvent selected from the group consisting of 2-butoxy ethanol, butyl acetate, furfuryl acetate, and mixtures any combination thereof.

55. (Withdrawn—Currently Amended) The method of claim 51 wherein the resin composition comprises at least one phenolic-based resin selected from the group consisting of a terpolymer of phenol, a phenolic formaldehyde resin, a mixture of phenolic and furan resin, and mixtures any combination thereof.

56. (Withdrawn—Currently Amended) The method of claim 55 wherein the resin composition further comprises at least one solvent selected from the group consisting of butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, and mixtures any combination thereof.

57. (Withdrawn—Currently Amended) The method of claim 51 wherein the resin composition comprises at least one HT epoxy-based resin selected from the group consisting of bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, and mixtures any combination thereof.

58. (Withdrawn—Currently Amended) The method of claim 57 wherein the resin composition further comprises at least one solvent selected from the group consisting of dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, and mixtures any combination thereof.

59. (Withdrawn—Currently Amended) The method of claim 51 wherein the resin composition comprises at least one phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

60. (Withdrawn—Currently Amended) The method of claim 50 wherein the coating material comprises at least one tackifying composition.

61. (Withdrawn—Currently Amended) The method of claim 60 wherein the tackifying composition is comprises at least one tackifying composition selected from the group consisting of a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, and [[a]] any combination thereof.

62. (Withdrawn) The method of claim 50 wherein the density-reducing material comprises micro-material.

63. (Withdrawn) The method of claim 50 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

64. (Withdrawn) The method of claim 50 wherein the particulate material is coated with the coating material on-the-fly.

65. (Previously Presented) The method of claim 18 wherein the servicing fluid is a fracturing fluid.

66. (Previously Presented) The method of claim 18 wherein pumping the servicing fluid into a subterranean formation comprises placing the servicing fluid into the subterranean formation at a pressure sufficient to create at least one fracture therein.

67. (Withdrawn) The method of claim 18 wherein pumping the servicing fluid into a subterranean formation comprises introducing the servicing fluid into the well bore so that the reduced-density, coated particulates form a gravel pack substantially adjacent to the wellbore.

68. (Currently Amended) A method of treating a subterranean formation comprising:
providing at least one coated particulate comprising a coating material and a particulate material

providing and at least one density reducing material;

adhering the density reducing material to a surface of the coated particulate on-the-fly to create at least one reduced-density, coated particulate;

providing a servicing fluid;

placing the reduced-density, coated particulate[[s]] in the servicing fluid; and

pumping the servicing fluid into the subterranean formation.

69. (Previously Presented) The method of claim 68 wherein the servicing fluid is a fracturing fluid.

70. (Previously Presented) The method of claim 68 wherein pumping the servicing fluid into a subterranean formation comprises placing the servicing fluid into the subterranean formation at a pressure sufficient to create at least one fracture therein.

71. (Previously Presented) The method of claim 68 wherein the density reducing material comprises polystyrene divinylbenzene.

72. (Currently Amended) The method of claim 68 wherein the coating material comprises at least one resin composition.

73. (Currently Amended) The method of claim 68 wherein the resin composition comprises at least one HT epoxy-based resin selected from the group consisting of bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, and mixtures any combination thereof.

74. (Currently Amended) The method of claim 68 wherein the resin composition further comprises at least one solvent selected from the group consisting of dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, and mixtures any combination thereof.

75. (Currently Amended) The method of claim 68 wherein the coating material comprises at least one tackifying composition.

76. (Currently Amended) The method of claim [[68]]75 wherein the tackifying composition ~~material is~~ comprises at least one tackifying composition selected from the group consisting of a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, and [[a]] any combination thereof.

77. (New) The method of claim 35 wherein the density reducing material comprises polystyrene divinylbenzene.